

CLAIMS

What is claimed is:

1. A computer-based method for creating, maintaining, updating, and querying inventory database over the Internet for the locations and the objects with time-dependent and time-independent attributes, comprising the steps of:

a) on the basis of interactive contacts with the potential customers (users, owners of the inventory) creating:

i) the initial lists of locations and locations' attributes to be included into the projected inventory database;

ii) the initial lists of objects and objects' time-dependent and time-independent controllable and uncontrollable attributes to be included into the projected inventory database for each of said locations;

iii) the evaluation of actual preferences for the customers(users) on the set of possible ageing manners for projected inventory database content;

b) registering the particular values for said locations' attributes to be included into the said inventory database thus creating the files of said attributes for said locations;

c) generating the particular initial values for objects' controllable inventorial time-dependent and time-independent attributes for each of said locations;

d) registering the said generated particular initial values for said objects' controllable inventorial time-dependent and time-independent attributes altogether with initial values for others objects' uncontrollable time-dependent and time-independent attributes for each of said locations thus creating the files of said objects' attributes for said locations;

e) transmitting the said files of locations' attributes, the said registered particular initial values for said objects' controllable inventorial time-dependent and time-independent attributes altogether with initial values for said others

objects' uncontrollable time-dependent and time-independent attributes for each or of said locations into the central data warehouse over the Internet;

f) creating the initial section of inventory database at the said central data warehouse and sending the initial report to the user (owner of the inventory) over the Internet;

g) on the basis of actual user's preferences on the set of possible ageing manners for said inventory database content predetermining regular updating periodicity Δt_u (time intervals between regular updates), thus defining the time schedule for the regular database's update;

h) after the said predetermined time interval Δt_u has elapsed:

i) recurrent returning to the steps a)-g);

ii) implementing the updating changes of the said files of said locations' attributes, of the said initial values for said objects' controllable inventorial time-dependent attributes altogether with the updating changes of said initial values for said others objects' uncontrollable time-dependent attributes for each of said locations;

iii) sending the current report to the user (owner of the inventory) over the Internet;

i) supplying the customer (the owner of the inventory) with the necessary software tools, including passwords, to implement over the Internet the whole range of the available user's operations, including but not limiting with:

i) querying the said current inventory database;

ii) requesting the irregular out-of-schedule update of the said current inventory database;

iii) changing the current lists of said locations and/or locations' attributes if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

iv) changing the current lists of said objects and/or objects' time-dependent and/or time-independent controllable and/or uncontrollable attributes for each or some of said locations if said changes are available

for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

v) updating the current files of said locations' attributes or filing over the Internet the request for said update to be implemented by the said central data warehouse;

vi) changing the current description of the customer's preferences if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

vii) changing the current values for said objects' controllable inventorial time-dependent and/or time-independent attributes altogether with current values for some of or for all others objects' uncontrollable time-dependent and/or time-independent attributes for each or for some of said locations if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

j) in the case when incoming query does not require the irregular update or stable connection over the Internet is unavailable, querying the current section of inventory database and sending to the customer a report, representing a prompt response to the customer's request;

k) in the case when incoming query requires the irregular update and stable connection over the Internet is available, recurrent return to the steps a)-g) and implementing:

i) the required changes of said current lists of said locations and/or locations' attributes;

ii) the required changes of said current lists of said objects and/or objects' time-dependent and/or time-independent controllable and/or uncontrollable attributes for some or for all of said locations;

iii) the required changes of said current files of said locations' attributes;

iv) the required changes of said current description of the customer's preferences;

v) the required changes of said current values for said objects' controllable inventorial time-dependent attributes altogether with the required changes for some of or for all of said current values for said others objects' uncontrollable time-dependent attributes for each or for some of said locations;

l) sending over the Internet to the user (owner of the inventory) the confirmation, reporting the changes made according to the user's requests at the step k).

2. The computer-based method of claim 1, wherein said steps of generating and registering the particular initial values for objects' controllable inventorial time-dependent and time-independent attributes further comprises:

a) generating the bar-code identification labels as initial values for objects' controllable inventorial time-independent attributes (primary keys) and placing these labels at the visually accessible surfaces of the said objects;

b) creating digital photo- and/or video-images as initial values for the objects' controllable inventorial time-dependent attributes in a way, that guarantees positioning of the said labels in a field of the said images;

c) registering the particular initial values for objects' controllable inventorial time-dependent and time-independent attributes on the basis of digital decoding of said photo- and/or video-images.

3. The computer-based method of claim 1, wherein said step of defining the time schedule for the regular database's update further comprises defining the time T_n for the database update number "n" as a function of the data base parameters $P(T_{n-1})$, which have been determined at the previous update number "n-1", and/or decision making strategy including but not limiting with the next:

i) presuming permanence of the database parameters

$$P(T_n) = P(T_{n-1}) = \text{const}$$

ii) using calculated approximations for $P(T_n)$ as a function F of all previous history of database parameters' values

$$P(T_n) = F\{P(T_i), i \in (0, n)\}$$

iii) calculating the time interval Δt_{un} , $T_n = T_{n-1} + \Delta t_{un}$, by resolving an optimization problem:

$$\Delta t_{un} = \text{Arg Max } U_c(\Delta t_{un}), \forall \Delta t_{un} \in (\Delta t_{\min}, \Delta t_{\max}),$$

where U_c stands for the customer's utility function,

Δt_{\min} stands for the minimal interval between two updates, which is technically possible,

Δt_{\max} stands for the maximal interval between two updates, which is determined reasonable by the customer;

iv) using a mixed strategy on the set of strategies i)-iii), when for one part of the database parameters strategy i) is implemented, for the other part of the database parameters strategy ii) is implemented, and for the last part of the database parameters strategy iii) is implemented.

4. A computer-based system for creating, maintaining, updating, and querying inventory database over the internet for the locations and the objects with time-dependent and time-independent attributes, said system comprising:

a plurality of potential users' (customers') computer terminals with its communication means;

a central operating block with its communication means, said central operating block comprising:

a) an evaluation unit that is having possibilities through said communication means of said central operating block to contact interactively said potential users' (customers') computer terminals and is programmed for creating:

i) the initial lists of locations and locations' attributes to be included into the projected inventory database;

ii) the initial lists of objects and objects' time-dependent and time-independent controllable and uncontrollable attributes to be included into the projected inventory database for each of said locations;

iii) the evaluation of actual preferences for the customers(users) on the set of possible ageing manners for projected inventory database content;

b) a time-controlling unit, that is coupled to said evaluation unit, and is programmed for predetermining regular updating periodicity Δt_u (time intervals between regular updates), thus defining the time schedule for the regular database's update, on the basis of actual user's preferences on the set of possible ageing manners for said inventory database content;

c) a regular update unit, that is coupled to said time-controlling unit, and is programmed under instructions of the said time-controlling unit:

i) to implement recurrently the updating changes of said values for said objects' controllable inventorial time-dependent attributes altogether with the updating changes of said values for said others objects' uncontrollable time-dependent attributes for each of said locations;

ii) to send the current report to the said user (owner of the inventory) over the Internet;

d) a query unit that is coupled to said evaluation and to said time-controlling units, and is programmed to supply the customer (the owner of the inventory) with the necessary software tools, including passwords, through the said communication means, to implement over the Internet the whole range of the available user's operations, including but not limiting with:

i) querying the said current inventory database;

ii) requesting the irregular out-of-schedule update of the said current inventory database;

iii) changing the current lists of said locations and/or locations' attributes if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

iv) changing the current lists of said objects and/or objects' time-dependent and/or time-independent controllable and/or uncontrollable attributes for each or some of said locations if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

v) updating the current files of said locations' attributes or filing over the Internet the request for said update to be implemented by the said central data warehouse;

vi) changing the current description of the customer's preferences if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

vii) changing the current values for said objects' controllable inventorial time-dependent and/or time-independent attributes altogether with current values for some of or for all others objects' uncontrollable time-dependent and/or time-independent attributes for each or for some of said locations if said changes are available for the customer, or filing over the Internet the request for these said changes to be implemented by the said central data warehouse;

e) an irregular update unit, that is coupled to said query unit, and is programmed to implement under instructions of the said query unit:

i) the required changes of said current lists of said locations and/or locations' attributes;

ii) the required changes of said current lists of said objects and/or objects' time-dependent and/or time-independent controllable and/or uncontrollable attributes for some or for all of said locations;

iii) the required changes of said current files of said locations' attributes;

iv) the required changes of said current description of the customer's preferences;

v) the required changes of said current values for said objects' controllable inventorial time-dependent attributes altogether with the required changes for some of or for all of said current values for said others objects' uncontrollable time-dependent attributes for each or for some of said locations;

vi) sending over the Internet to the user (owner of the inventory) the confirmation, reporting the changes made according to the user's requests;

f) a data warehouse unit that is coupled to said evaluation, to said regular update, and to said irregular update units, and is programmed to create the initial and updated sections of inventory database and to send the reports to the user (owner of the inventory) over the Internet through the said communication means of the said central operating block;

a plurality of local inventory blocks with its movable computer terminals and communication means, said local inventory blocks comprising:

a) generators of time-dependent and time-independent controllable attributes that are programmed under instructions received from the said central operating block over said communication means

i) to generate the particular initial values for objects' controllable inventorial time-dependent and time-independent attributes;

ii) to generate regular updates of the said values in accordance with the schedule received from the said regular update unit of the said central operating block over said communication means;

iii) to generate irregular updates of the said values if such updates will be requested by the said irregular update unit of the said central operating block over said communication means and stable connection over the Internet is available;

b) sensors of time-dependent and time-independent controllable and uncontrollable attributes that are programmed under instructions received from the said central operating block over said communication means

i) to sensor initial and updated values of objects' controllable and uncontrollable inventorial time-dependent and time-independent attributes;

ii) to transmit said initial and updated values to a decoding and registration unit;

c) a decoding and registration unit that is coupled to said sensors and is programmed under instructions received from the said central operating block over said communication means

i) to register the particular values for said location's attributes to be included into the said inventory database thus creating the files of said attributes for said location;

ii) to decode and register initial and updated values of objects' controllable and uncontrollable inventorial time-dependent and time-independent attributes thus creating the initial and updated files of said attributes for said locations;

iii) to transmit the said files of said location's attributes altogether with the said registered initial and updated values into the said central data warehouse of the said central operating block through the said communications means of the said local inventory block over the Internet.

5. The system according to claim 4, wherein:

a) said generators of time-independent and time-dependent controllable attributes are programmed for:

i) generating the bar-code identification labels as initial values for objects' controllable inventorial time-independent attributes (primary keys) and placing these labels at the visually accessible surfaces of the said objects;

ii) creating digital photo- and/or video-images as initial and updated values for the objects' controllable inventorial time-dependent attributes in a way, that guarantees positioning of the said labels in a field of the said images;

b) said decoding and registration unit of time-independent and time-dependent controllable attributes is programmed for registering the particular initial and updated values for objects' controllable inventorial time-dependent and time-independent attributes on the basis of digital decoding of said photo- and/or video-images.

6. The system according to claim 4, wherein said time-controlling unit is programmed for defining the time T_n for the database update number “n” as a function of the data base parameters $P(T_{n-1})$, which have been determined at the previous update number “n-1”, and/or decision making strategy including but not limiting with the next:

i) presuming permanence of the database parameters

$$P(T_n) = P(T_{n-1}) = \text{const}$$

ii) using calculated approximations for $P(T_n)$ as a function F of all previous history of database parameters' values

$$P(T_n) = F\{P(T_i), i \in (0, n)\}$$

iii) calculating the time interval Δt_{un} , $T_n = T_{n-1} + \Delta t_{un}$, by resolving an optimization problem:

$$\Delta t_{un} = \text{Arg Max } U_c(\Delta t_{un}), \forall \Delta t_{un} \in (\Delta t_{umin}, \Delta t_{umax}),$$

where U_c stands for the customer's utility function,

Δt_{umin} stands for the minimal interval between two updates, which is technically possible,

Δt_{umax} stands for the maximal interval between two updates, which is determined reasonable by the customer;

iv) using a mixed strategy on the set of strategies i)-iii), when for one part of the database parameters strategy i) is implemented, for the other part of the database parameters strategy ii) is implemented, and for the last part of the database parameters strategy iii) is implemented.